IN THE CLAIMS

Please amend the following claims.

1. (Currently Amended) [A method for forming a dielectric layer on a silicon substrate which includes a silicon trench formed between upper portions and having a trench bottom and a trench wall, said substrate disposed in a substrate processing chamber, said method using a precursor which provides deposition rate dependence of said dielectric layer on differently constituted surfaces at different levels on the substrate, said differently constituted surfaces at different levels comprising said trench bottom and a material on said upper portions, the method comprising the steps of:]
A method comprising:

providing a silicon substrate in a substrate processing chamber, said silicon substrate having upper portions;

forming a trench in said silicon substrate between said upper portions, said trench having a trench bottom and a trench wall;

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introducing [said] a precursor, preferably TEOS, into said substrate processing chamber[;] to form a dielectric layer over said silicon substrate, the precursor providing a deposition rate dependence of said dielectric layer on differently constituted surfaces at different levels on said substrate, said differently constituted surfaces at different levels comprising said trench bottom and a material on said upper portions;

flowing ozone into said substrate processing chamber to react with said precursor to deposit a dielectric layer over said substrate; and

adjusting an ozone/precursor ratio between said ozone and said precursor to regulate deposition rates of said dielectric layer on said differently constituted surfaces until said dielectric layer develops a substantially planar dielectric surface.

2. (Original) The method of claim 1 further comprising, prior to said introducing, flowing, and adjusting steps, the step of cleaning said trench.

3. (Original) The method of claim 2 wherein said cleaning step includes exposing said trench to a wet etchant.

4. (Original) The method of claim 1 wherein said material on said upper portions includes a CVD anti-reflective coating on said silicon substrate.

5. (Original) The method of claim 1 wherein said trench is formed by applying a CVD anti-reflective coating on and contacting said silicon substrate; forming a photoresist on said CVD anti-reflective coating; exposing a portion of said photoresist to a light to define a location where said trench is to be formed; removing said photoresist at said location; and etching, at said location, through said CVD anti-reflective coating and through a depth of said substrate to form said trench at said location.

6. (Original) The method of claim 1 further comprising the steps of flowing an oxygen-containing gas into said substrate processing chamber and heating said substrate to substantially simultaneously densify said dielectric layer and to form a thermal oxide to said trench bottom and trench wall.

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7. (Original) The method of claim 1 wherein said adjusting step includes generating faster deposition rates on lower surfaces than on higher surfaces of said substrate.

8. (Original) The method of claim 1 further comprising the step of generating a pressure of about 200-700 Torr and a temperature of about 300-500°C in said substrate processing chamber.

9. (Original) The method of claim 1 wherein said adjusting step includes adjusting said ozone/precursor ration to about 10:1 to 20:1, preferably about 13:1.

10. (Original) The method of claim 9 further comprising the step of controlling a pressure in said substrate processing chamber based on an ozone/precursor ratio selected during said adjusting step.

11. (Original) A substrate processing system comprising:
a housing defining a process chamber;
a substrate holder, located within said process chamber, for holding a silicon substrate which includes a silicon trench formed between upper portions and having a trench bottom and a trench wall;
a gas delivery system for introducing process gases into said process chamber;
a controller for controlling said gas delivery system; and
a memory coupled to said controller comprising a computer-readable medium having a computer-readable program embodied therein for directing operation of said controller, said computer-readable program including a set of instructions to control said gas delivery system to introduce a process gas including ozone and a precursor into said process chamber to form a dielectric layer on said silicon substrate, said precursor providing deposition rate dependence of said dielectric layer on differently constituted surfaces at different levels comprising said trench bottom and a material on said upper portions of said silicon substrate, and to adjust an ozone/precursor ratio between said ozone and said precursor until said dielectric layer develops a substantially planar dielectric surface.

A1 cont.

12. (Withdrawn)

13. (Withdrawn)

14. (Withdrawn)

15. (Withdrawn)

16. (Currently amended) A method for forming a trench isolation structure on a silicon substrate, the method comprising the steps of:
applying a CVD anti-reflective coating on and contacting said silicon substrate;
forming a photoresist on said CVD anti-reflective coating;
exposing a portion of said photoresist to a light to define a location where a trench is to be formed;

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removing said photoresist at said location; and
etching, at said location, through said CVD anti-reflective coating and through a depth of said substrate to form said trench at said location.

17. (Original) The method of claim 16 wherein said CVD anti-reflective coating is applied with a thickness of about 1000-2000 Å.

18. (Original) The method of claim 16 further comprising, following said etching step, the steps of:
removing a remainder of said photoresist; and
filling said trench on said substrate with a trench fill material, preferably an oxide.

19. (Original) The method of claim 18 wherein said oxide comprises an oxide film produced by reacting a precursor, preferably TEOS, and ozone.

20. (Original) The method of claim 19 wherein said oxide film has a ratio of said ozone to said precursor of about 10:1 to 20:1, preferably about 13:1.

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21. (Original) The method of claim 19 further comprising the steps of:
subjecting said substrate to an oxygen-containing gas; and
heating said substrate to substantially simultaneously densify said trench fill material and to form a thermal oxide at an interface between said trench fill material and a surface of said trench.

22. (Original) The method of claim 18 further comprising the steps of:
subjecting said substrate to an oxygen-containing gas; and
heating said substrate to substantially simultaneously densify said trench material and to form a thermal oxide at an interface between said trench fill material and a surface of said trench.

23. (Original) The method of claim 18 wherein said trench filling step includes depositing a layer of said trench fill material in said trench and said CVD

anti-reflective coating; and selectively removing said trench fill material over said CVD anti-reflective coating.

24. (Original) The method of claim 23 wherein said selective removing step is a chemical mechanical polishing step and wherein said CVD anti-reflective coating acts as an etch stop for said chemical mechanical polishing step.

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25. (Original) The method of claim 16 wherein said CVD anti-reflective coating is formed by a plasma-enhanced chemical vapor deposition of a dielectric material.

26. (Original) The method of claim 25 wherein said dielectric material is selected from the group consisting of silicon nitride and silicon oxynitride.

27. (Original) The method of claim 16 wherein said CVD anti-reflective coating comprises silicon carbide.